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ABSTRACTING AND INDEXING COVERAGE

OF THE

LITERATURE OF SPACE BIOLOGY

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ABSTRACTING AND INDEXING COVERAGE
OF
THE LITERATURE OF
SPACE BIOLOGY

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SUMMARY

1537

1. A total of 147 research papers pertaining to space biology, which were published in 1962, were selected from 31 sources. In addition, 480 papers published during the period 1959-1964 were selected because the authors are current grantees/contractors of the Space Biosciences Programs Division, Office of Space Science and Applications, National Aeronautics and Space Administration.
2. For the first group of 147 titles, a search was made in four abstracting/indexing journals. For the second group of 480 titles, a search was made in six abstracting/indexing journals.
3. Of the first group of 147 papers, 68.3% were found in one or more of the four abstracting/indexing journals. Of the second group of 480 papers, 59.4% were found in one or more of the six abstracting/indexing journals examined.
4. In three abstracting/indexing journals, the abstract usually appeared during the original publication year of the paper concerned. If an abstract did not appear by the end of the first post-publication year, it was unlikely to appear at a later date.

author

ABSTRACTING AND INDEXING COVERAGE OF THE LITERATURE OF SPACE BIOLOGY

Introduction

"Rediscovery of the wheel" as an opprobrious charge has been levelled at the entire scientific community from time to time. Whether true or not, the research scientist attempts to avoid this in a number of ways. On the initiation of a new research project, the investigator begins his serious search for either identical or similar works done by others in his newly chosen area of interest. This search begins in conversations with his colleagues. Occasionally, the investigator will query the Science Information Exchange* for "Notices of Research in Progress," a most significant source of information. The search continues to the various announcements of publication - the products of the several abstracting and indexing services.

Oftentimes, hours are occupied searching through abstracting journals for reported work of interest. When what appear to be pertinent abstracts (or titles) are found, the individual will retrieve the paper and peruse it for several reasons. The found paper may report the very work he proposed and a decision must be made to either deliberately repeat it (which is the embodiment of that which is called "Science") or to find another area of interest. Alternatively this found paper will suggest alterations to the proposed work, will provide technical assistance, or will suggest a new area of even greater interest to the investigator. In any event, if the abstracting service does substantially cover the general subject-matter field, and with a sufficiently short time-lag between appearance of the paper and its abstract, the investigator has a high confidence level in his search and can know that unplanned "rediscovery of the wheel" is not likely to occur. The investigator already occupied with his research depends upon these services for the announcement of work with which he can compare his own results. He may here first discover that which either reinforces or contravenes his findings and may choose to refer to this work done by others for any number of reasons. Abstracting and indexing services provide current awareness for the investigator.

The objectives of this survey study are to determine:

- 1) The extent of coverage by the abstracting/indexing services of two selected bodies of literature
- 2) The extent of duplicate coverage by the abstracting/indexing journals chosen for the search
- 3) The time-lag or period between publication of the paper and the appearance of an abstract or index entry

Two sections comprise this report. Chapter 1 deals with 147 papers speci-

*Science Information Exchange, 209 Madison National Bank Building, 1730 M Street, N.W., Washington, D.C. 20036.

fically selected for their pertinence to space biology, and from publications dated 1962. Chapter 2 concerns a group of 480 papers in which not the paper's pertinence but an author criterion was utilized as the basis for selection.

BIOLOGICAL ABSTRACTS (BA), CHEMICAL ABSTRACTS (CA), INDEX MEDICUS (IM), INTERNATIONAL AEROSPACE ABSTRACTS (IAA), AEROSPACE MEDICINE ABSTRACTS (AMA), and SCIENTIFIC AND TECHNICAL AEROSPACE REPORTS (STAR) were selected as those services most likely to include the information represented by the papers of this study. Although STAR has responsibility for carrying the government report literature only, it is included in an effort to determine the degree to which this responsibility is met. Each issue of all the above named abstracting or indexing journals was searched for every title, beginning with 1959, or on the initiation of the service. The last two named were not included, nor were issues prior to 1961 searched, for that which is reported in Chapter 1.

Chapter 1

Papers Pertinent to Space Biology

A collection of 147 papers pertaining to space biology was selected from 31 sources. These sources included 26 periodicals and 5 non-periodicals. All of the sources were printed in the English language, although some of the papers were originally in a foreign language. In this survey, a periodical is defined as a publication that appears more often than once a year. Non-periodicals are defined as publications that appear only once a year or appear at irregular intervals. Included as non-periodicals were a collection of papers presented at an annual meeting, a symposium, a series of lectures on aerospace medicine, and two volumes of papers representing the recent advances in the field.

The selection of sources for papers began with a tentative list of publications from the sources listed as being abstracted by Biological Abstracts and International Aerospace Abstracts. The initial list was checked against the publications abstracted by Chemical Abstracts and Index Medicus with the intention of selecting some sources which would be abstracted by more than one of the services studied.

A total of 87 publications were selected in this manner. The papers in these publications for the year 1962 were scanned by title and text to determine if they were pertinent to space biology. Sixty of the original 87 publications did not contain papers that were considered closely related to space biology and therefore were not used, thus reducing the list to 27 publications. Four additional sources for papers were added to the 27 publications scanned. Two of these sources were found in Jet Propulsion Laboratory Abstracts, a third source was a popular periodical known to have pertinent articles from previous examination of the periodical, and a fourth source was found in a search of the card catalog of the Library of Congress.

After the sources were identified, papers were selected from some or all of each source's entries. In some sources only one or two papers were available, in others, twenty or more were available. A list of the selected papers was produced and the four abstracting services were checked for the inclusion of these papers in the 1961, 1962, and 1963 volumes of the abstracting/indexing service.

In Table 1 a list of the senior authors of the papers and the source of the paper is given. A record of the service that abstracted each source and a record of the papers found abstracted are also given in Table 1.

Table 1. Coverage of Selected Papers by the Abstracting Services - Listed by Source.

Part 1. Non-Periodicals

<u>Senior Author</u>		<u>Abstracting Service</u>			
		BA #	CA o	IAA #	IM* o **
	ADVANCES IN ASTRONAUTICAL SCIENCES				
Celentano, J.T.					
Kornfield, A.T.					
Whisenhunt, G.B.					
	ADVANCES IN SPACE SCIENCE & TECHNOLOGY	#	o	#	o
Gerathewohl, S.J.				x	
MacGowan, R.A.				x	
	AMERICAN ROCKET SOCIETY, 17th ANNUAL MEETING	o	o	o	o
Berry, C.A.					
Dalkey, N.C.				x	
Jackson, C.D.				x	
Rathert, G.A.				x	
	INTERNATIONAL SPACE SCIENCE SYMPOSIUM 3rd, 1962	o	o	#	o
Curtis, H.J.					
Foelsche, T.					
Glenn, J.H.					
Graybiel, A.					
Imshenetsky, A.A.					
Mathews, C.W.					
Parin, V.V.				x	
Titov, G.S.				x	
	LECTURES IN AEROSPACE MEDICINE	o	o	o	o
Arnon, D.I.					
Culver, J.F.					
Hekhuis, G.L.					
Lamb, L.E.					
Romas, J.A.					
Walker, R.Y.					
Ware, R.W.					
Warren, B.H.					

* BA - Biological Abstracts
 CA - Chemical Abstracts
 IAA - International Aerospace Abstracts
 IM - Index Medicus

** # - source reported abstracted
 o - source not reported abstracted
 x - paper was found abstracted
 blank - paper was not found abstracted

Table 1 - continued

Part 2. Periodicals

Abstracting Service

Senior Author

AEROSPACE ENGINEERING

BA o	CA #	IAA #	IM o
---------	---------	----------	---------

Cord, J.N.
 Gilruth, R.R.
 Fielder, D.E.
 Grodsky, M.A.
 Fitts, P.M.
 Laughlin, P.C.
 Lindquist, O.H.
 Luetjen, H.H.
 Williams, W.C.

		X	
		X	

AEROSPACE MEDICINE

#	#	#	#
---	---	---	---

Back, K.C.
 Bartlett, R.G.
 Bartlett, R.G.
 Benson, V.G.
 Berry, C.A.
 Black-Schaffer, B.
 Catterson, A.D.
 Clark, B.
 Duvoisin, R.C.
 Ettleson, B.L.
 Fenichel, R.L.
 Fenno, R.M.
 Fryer, D.I.
 Gaeuman, J.V.
 Gell, C.F.
 Gould, A.J.
 Graveline, D.E.
 Graveline, D.E.
 Graybiel, A.
 Graybiel, A.
 Guignard, J.C.
 Hanna, T.D.
 Hartman, B.
 Headley, R.M.
 Henry, J.P.
 Holden, G.R.
 Hoover, G.N.
 Jacobius, A.J.
 Kennedy, R.S.
 Konikoff, J.J.
 Lindberg, E.F.
 Longo, A.A.
 Lovelace, W.R., II

X			
X		X	
		X	X
X		X	X
X			X
X			X
		X	
X		X	
X		X	X
X			
X		X	
X		X	
	X	X	X
X			X
X		X	X
X		X	X
X			X
		X	X
		X	X
X		X	X
X		X	X

Table 1, Part 2 - continued

		<u>Abstracting Service</u>			
<u>Senior Author</u>		BA #	CA #	IAA #	IM #
AEROSPACE MEDICINE - continued					
Marotta, S.F.				X	X
Marotta, S.F.				X	X
Matson, J.F.					
Miller, S.U.		X		X	X
Meek, J.C.		X		X	X
Mohler, S.R.				X	X
Neville, J.				X	X
Pfrommer, J.R.		X			X
Polis, B.D.		X			X
Richmond, D.R.		X		X	
Rohles, F.H.					X
Schindler, C.A.		X			X
Smith, W.M.		X		X	X
Sokoloff, A.		X		X	
Taylor, E.R.		X		X	X
Thompson, A.B.		X		X	
Vykukal, H.C.		X			X
Webb, J.E.					X
Wunder, C.C.		X			
AIBS - BIOSCIENCE					
		#	o	#	o
Calvin, M.		X		X	
Holmes, B.		X		X	
Roadman, C.H.		X			
AMERICAN JOURNAL OF BOTANY					
		#	#	o	o
Krauss, R.W.		X			
AMERICAN JOURNAL OF PSYCHIATRY					
		#	#	o	#
Barnard, G.W.		X			X
AMERICAN PSYCHOLOGIST					
		#	o	o	o
Grether, W.F.		X			
AMERICAN ROCKET SOCIETY JOURNAL					
		o	o	#	o
Boyce, W.C.				X	
Schaeffer, H.J.				X	
Waggoner, J.N.				X	X

Table 1, Part 2 - continued

<u>Senior Author</u>		<u>Abstracting Service</u>			
		BA #	CA #	IAA o	IM #
Dyer, D.L.	APPLIED MICROBIOLOGY	x			x
	ASTRONAUTICS	o	o	#	o
Beischer, D.E.				x	
Berglund, R.A.				x	
Bricker, L.				x	
Clark, L.G.				x	
Decker, R.S.				x	x
Gilruth, R.R.				x	
Hill, P.R.				x	
Konecchi, E.B.				x	
Kurzhals, P.R.				x	
Popma, D.C.				x	
Schaeffer, H.J.				x	
Tobias, C.A.				x	
Voas, R.B.				x	
	ASTRONAUTICAL SCIENCE REVIEW	o	o	#	o
Lawton, R.W.				x	
	CANADIAN AERONAUTICAL & SPACE JOURNAL	o	o	#	o
Radford, K.J.				x	
	FORTUNE	o	o	o	o
Boehm, G.A.W.					
Lessing, L.					
	HUMAN FACTORS	o	o	#	o
Baker, C.A.					
Steedman, W.C.				x	
	INTERNATIONAL JOURNAL OF RADIATION BIOLOGY	#	o	o	#
Gilbert, C.W.		x	x		

Table 1, Part 2 - continued

<u>Senior Author</u>		<u>Abstracting Service</u>			
		BA #	CA o	IAA o	IM #
Guedry, F.E. Pierce, E.C., Jr.	JOURNAL OF APPLIED PHYSIOLOGY				x
Cockett, AT.K.	THE JOURNAL OF UROLOGY	#	o	o	#
Nowitsky, A.M.	MISSILES & SPACE	o	o	#	o
Beller, W. Beller, W. Beller, W. Beller, W. Collins, A.H. Collins, A.H. Gettler, M. La Fond, C.D. Lindsey, R. Parry, A. Petrov, Y. Wilks, W.E.	MISSILES & ROCKETS	o	o	#	o
Levin, G.V.	NUCLEONICS	o	o	#	o
Bennett, G.	PROCEEDINGS OF THE ROYAL INSTITUTION OF GREAT BRITAIN	o	o	o	o
Matthern, R.O. Reed, D.E. Werntz, O.G.	U.S. QUARTERMASTER ACTIVITIES REPORT	#	o	o	o

Table 1, Part 2 - continued

<u>Senior Author</u>		<u>Abstracting Service</u>			
		BA #	CA o	IAA #	IM o
Neville, J.R.	THE REVIEW OF SCIENTIFIC INSTRUMENTS				
	SCIENCE	#	o	#	#
Birdsey, E.C.			x		x
Levin, G.V.		x		x	
Von Hoerner, S.		x		x	
	SCIENTIFIC AMERICAN	#	o	#	#
Rogers, T.A.		x		x	x
	SPACE/AERONAUTICS	o	o	#	o
Bambenek, R.A.				x	
Jones, E.W.				x	
	SPACE WORLD	o	o	#	o
Rublowsky, J.					
Slayton, D.K.					
Titov, G.					

The distribution of the 147 sample of papers used in the present study are summarized by specified categories in Table 2. The highest coverage, 78.3% for "Papers from periodicals reported abstracted" indicates the level of literature retrieval obtained. In practice, an 85% level of retrieval is considered acceptable by many researchers, thus the combined effort of these four services does not attain the desired level in this subject area.

Only 67.3% of the entire sample, "Papers from all sources," were retrieved. This indicates that if the 147 papers used are considered a reliable sample of the literature on space biology, then the four services studied are abstracting only slightly more than 2/3 of the total available material.

The combined coverage of "Papers from all sources reported abstracted" is only 73.7% which indicates that the combined reported coverage is less than 3/4 of that which was available for coverage. Note that reported coverage in this study indicates only that the source is covered by the abstracting service. The criteria for the selection or exclusion of any given paper by a service was not known, consequently it was assumed that all papers which pertained to space biology had an equal probability of being selected by the abstracting services.

An estimate of the number of abstracting services a researcher would need to obtain an 85% level of literature retrieval was made based on the individual contribution of the four services. The non-duplicated contribution of each of the services was listed in descending order. The initial contribution of IAA and the combined additional contribution of the other three services was determined on a percent basis. The average contribution of the three services was added in multiples to the IAA's initial contribution until the desired level of retrieval was reached.

IAA	71 articles = 47.9 or 48% of 147 articles
BA	21 additional articles
IM	5 additional articles = 18.1% or 6% per service
CA	1 additional article

48% plus 6 X 6% = 84% coverage. Thus 7 abstracting services are required to obtain 84% coverage.

In line 6 of Table 2 the 30.6% coverage of "reported abstracted non-periodical sources" is the lowest of all of the reported sources. Possible explanations for this low coverage are: 1) a time lag between the actual public presentation of the paper, at an annual meeting, for example, and the publication of the paper, and 2) preprints which may be abstracted appearing prior to the appearance of the paper in journal form, this last mentioned time discrepancy is referred to in this survey as "non time lag."

Table 2. Distribution of Papers, by Coverage in Abstracting Services

	<u>Total</u>	<u>Papers Found</u>	<u>Papers Not Found</u>	<u>Coverage</u>
1. Papers from all sources	147	99	48	67.3%
2. Papers from all sources reported abstracted	133	98	35	73.7%
3. Papers from all periodicals	123	94	29	76.3%
4. Papers from periodicals reported abstracted	120	94	29	78.3%
5. Papers from all non-periodicals	25	7	18	28.0%
6. Papers from non-periodicals reported abstracted	13	4	9	30.6%
7. Papers from sources not reported abstracted	15	3	12	20.0%

The former explanation was found to be the case in one volume of "Advances in the Astronautical Science," (this particular volume was not used in this survey). The meeting occurred in 1961 and the volume was not published until 1963. Papers therefore abstracted from the volume appear to lag in time in reference to the actual delivery of the papers. Preprints on the other hand, when used as a source of abstracting material, give a paper, which is later published in a journal, a "non lag time" identity.

In four sources which were not reported abstracted, (line 7 of Table 2) 15 papers were found that pertained to space biology. Three of these papers were found abstracted however, which implies that either an oversight in searching for abstracted papers occurred in this survey or the abstracting services do not maintain an up-to-date listing of sources abstracted. One of these sources was a popular periodical, FORTUNE, which is not normally considered as a source for papers on space biology, thus this may be why some sources are overlooked, namely because the papers appear at irregular intervals in publications that are not recognized by the abstracting services as prime sources for papers.

The original intention of this study included the use of sources that would be abstracted by more than one of the four services. Some duplication of abstract coverage was expected. A summary of duplicated coverage is found in Table 3.

Out of 99 papers found, 54 were abstracted in either two or three of the four abstracting/indexing tools. This duplication of effort may be considered

necessary to insure complete coverage of the more important literature by the user, but this duplication must also reduce the total literature that is abstracted by all the services combined. The various services may abstract the same article, but under different index headings. For example: Biological Abstracts may abstract a paper because it deals with biological activities, Index Medicus may also select it on the basis of its medical significance while International Aerospace Abstracts may abstract it because it pertains to space research.

Table 3. Duplication of Coverage Among the Four Abstracting Services

Number of papers not found in any of the services	48 (includes 12 papers from sources not reported abstracted)
Number of papers found in only one of the four services	46 (includes 3 papers from sources not reported abstracted)
Number of papers found in two of the four services	37
Number of papers found in three of the four services	16
Number of papers found in all four services	0

The coverage of papers abstracted and sources used by the individual services is summarized in Table 4. Part a, gives the coverage of papers by three indices:

The Possible/Total Column contains the per cent value of the total number of papers (147) that an individual service could have abstracted. The highest value was IAA's 82.4%. The other services were considerably lower, ranging from 41.9% for IM to 52.0% for BA. These values are not a reflection of the comparative worth of the four services, but rather reflects the selection of the sample papers in terms of the subject field, space biology. IAA's potentially high retrieval value is to be expected considering the scope of the service.

The Found/Possible Column indicates the percent of the possible papers (papers that appeared in sources reported abstracted) that were actually found abstracted in searching the various services. Three of the four services were within 11% of each other: IM had 69.4%, BA had 62.3% and IAA had 58.2%. The fact that none of the services showed a retrieval of over 70% and that CA was extremely low, 3.1% indicates what was suggested earlier, namely that the services are selective in their choice of papers.

The third and last category for evaluating paper coverage is the Found/Total percentage. The percent of the total 147 sample found for any of the services studied was less than 50%. The values ranged from a low of 1.3% for CA to a high of 48.3% for IAA.

In Part b of Table 4 the percent of the total number of sources reported and the percent of the reported sources that were found are listed. These values reflect similar values found in Part a of Table 4.

Table 4

Part a. Comparison of Total Number of Papers with the Total Available and the Total Abstracted by the Individual Services

	Total Number of Papers Used in Study	Possible Number for Individual Abst. Service	Found Number for Individual Abst. Service	% <u>Possible</u> Total	% <u>Found</u> Possible	% <u>Found</u> Total
BA	147	77	48	52.0	62.3	32.4
CA	147	65	2	43.9	3.1	1.3
IAA	147	122	71	82.4	58.2	48.3
IM	147	62	43	41.9	69.4	29.1

Table 4

Part b. Comparison of Total Number of Sources with Actual Number of Sources Reported and Number of Sources Found

	Total Sources Used in Study	Total Sources Rep'td by Individual Abstract Service	Reported* Sources Found	% <u>Reported</u> Total	% <u>Found</u> Reported
BA	31	15	9	48.4	60.0
CA	31	5	1	16.5	20.0
IAA	31	19	16	61.1	84.2
IM	31	7	6	22.6	85.9

* Two cases were found where a paper was abstracted, although the particular service did not indicate that the source for the paper was used for obtaining abstracts.

Table 5

Abstract/Indexing Coverage by Year and Service
Percent of Papers during Year

	1959(73)*	1960(68)*	1961(84)*	1962(130)*	1963(97)*	1964(28)*
NONE	46.6	48.5	38.1	27.7	37.1	85.7
AMA	0	4.4	2.4	3.8	3.1	0
BA	37	25	44	46.2	41.2	0
CA	23.3	16.2	19	26.9	18.6	10.7
IAA	0	4.4	3.6	8.5	17.5	0
IM	4.1	25	33.3	30	25.8	3.6
STAR	1.4	0	0	3.1	15.5	0
TOTAL	112.4	117.5	140.4	146.2	158.8	100.0

*Number of papers in the total sample for the year indicated.

If we dismiss the year 1964 from further consideration here, because of the to-be-demonstrated time-lag, then, with the exception of 1960, BIOLOGICAL ABSTRACTS has a demonstrably higher percentage of coverage than do any of the other services - as would be expected. The low coverage reflected for INTERNATIONAL AEROSPACE ABSTRACTS is due to the lack of clear relevance of the papers selected for the aerospace sciences.

Appearance of abstracts or summaries in SCIENTIFIC AND TECHNICAL AEROSPACE REPORTS was not to be expected to the degree revealed here, particularly for the year 1963. There are at least two possible explanations. First, the author originally submitted his paper in the form of a report to his granting agency and then submitted a paper with the same title (and summary) for publication in the open literature where it was picked-up by one or more of the abstracting/indexing services. Second, during 1963 STAR went to the open literature for some of its entries. Since it can be demonstrated that the second event did not occur, there is a suggestion of an increase in the first practice.

The fluctuations in extent of coverage from year to year are of some interest. Reference to Table 5 reveals that INTERNATIONAL AEROSPACE ABSTRACTS are substantially increasing their coverage as time progresses, increasing by a factor of 4 in four years. The vacillations of coverage by the others probably have no significance, merely reflecting the absence of a definite policy to alter coverage of a specific discipline or area of interest.

Evidence of duplicate coverage - abstracting or indexing a paper by multiple (more than one service) services, is shown by the totals at the bottom

of Table 5. Except for the year 1964 when no duplicate coverage has so far been found (it will become apparent by the end of 1965) the evidence indicates a constant and marked increase in this practice of duplicate coverage.

Table 6. Duplicate Coverage of Papers

Number of papers found in no abstracting/indexing journal	-	195
Number of papers found in one abstracting/indexing journal	-	154
Number of papers found in two abstracting/indexing journals	-	86
Number of papers found in three abstracting/indexing journals	-	41
Number of papers found in four abstracting/indexing journals	-	2
Number of papers found in five abstracting/indexing journals	-	2
Number of papers found in six abstracting/indexing journals	-	0
	TOTAL	- 480

Forty and six-tenths percent (40.6%) of the sample was not found abstracted or indexed by the six services. When duplicate coverage occurred, it was most likely to involve BIOLOGICAL ABSTRACTS and INDEX MEDICUS. If covered more than twice, then CHEMICAL ABSTRACTS was most likely to also abstract or summarize the paper. By far the greatest preponderance of duplicate coverage was found during 1963. This parameter will receive further scrutiny in the coming months.

Duplicate coverage appears here as a mixed blessing. It is true that each duplicate required the space and time which could have been given one of those papers not covered at all; however, it is a rare laboratory library that subscribes to all six of these services and some duplicate coverage increases the chance that an abstracted/indexed paper will be found during a search.

One paper was abstracted four years after publication. By referring to Table 7, one sees that time-lag is to be measured in months rather than years, the more significant number of papers being abstracted during the same year of publications. Without further exploration of all of the reasons for a time-lag (and they are numerous and good ones), it becomes apparent that considerable variation does exist between the services in the percentage of abstracts or index entries furnished during the same year of publication of the paper.

Table 7. Time-lag from Publication of Paper to Announcement
in Abstracting/Indexing Journal

Journal	Time		
	same year	1 year	2 years
AMA	3*	9	--
BA	126	59	8
CA	58	40	5
IAA	27	4	2
IM	67	47	3
STAR	10	11	--

*Number of papers abstracted during the time indicated

The 480 papers authored by our sample appeared in 224 different publications, 137 of them were serials and 87 were not. Of these 87, some were books, chapters in books, conference and symposium reports, and technical reports to governmental agencies. In only 5 serials did ten or more papers appear. They are: "Annals of the New York Academy of Science" (11), "Nature" (17), "Radiation Research" (12), "Proceedings" of the Federation of American Societies for Experimental Biology (13), and "Science" (36), all of which are listed as being abstracted/indexed by five of the services of this study. Eighty-one (81) serial publications carried a single paper by one of the authors of our population during the period 1959-1964.

Those papers comprising the 40.6% neither abstracted nor indexed by any of the six services searched, form a special population. Careful examination of them indicates that neither the title nor the author are important factors in their omission, what is important is the publication in which the paper appeared. It should be recalled that these 480 papers were all of the papers of the selected authors. Their topics, hence place of publication, ranged over a very broad spectrum - certainly not limited to the life sciences, chemistry, or aerospace sciences. Since the services must limit the number of serial publications from which they abstract, then many papers are missed. To increase the abstract coverage requires an increase in the number of publications utilized by the services, which in turn requires more individuals to prepare and/or edit the abstracts. It is this last parameter that cannot be solved by merely increasing available funds, the solution can only be approached by a greater acceptance of this responsibility for the provision of abstracts and/or summaries by the scientific community.